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Socialising Presence

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Abstract

Long distance relationships are not well supported by current communication technologies. Although these technologies are superb at communicating facts, they lack an emotional element which I argue is necessary for people who care about one another and yet who must live apart. My PhD aims to address this problem by examining social presence in technologically mediated relationships. Thus far I have built a number of teletangible devices to mimic human actions across a distance. I will deploy these systems within a number of long-distance relationships. I expect my research to result in new understanding which will lead to communication technologies with higher levels of social presence, thus supporting long-distance relationships.

Keywords

Social Presence, Communication Technologies

ACM Classification Keywords

H5.m Information Interfaces and Presentation (e.g., HCI): Miscellaneous

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General Terms

Human Factors, Design

Research Situation

The research we are about to discuss is a result of my PhD. Based in a computer science department, I have been working on social presence questions for a year, having previously completed a Masters dissertation on a similar topic. I expect to take another two years to complete my thesis. By the time of the consortium I will have defended my proposed topic and plan before an internal thesis committee.

Thus far I have begun work on several projects, each of which I will discuss in detail later on. I have constructed three devices (Figures 1 to 4) which are designed to mimic human actions across a distance. These are in the process of being evaluated. A diary study is intended to address one of my fundamental problem statements – namely, to determine what constitutes social presence in relationships.

By attending the consortium, I hope to benefit in three ways. The first is to obtain critical feedback on my ideas given the expertise of the DC panel. I would like to discuss both the communication devices I have constructed and whether using these novel devices is a sensible method to better understand what factors impact social presence. I have been experimenting with

a wide range of devices and would value an external perspective on which are of the most value to the CHI community. The second benefit would be to practice defending my ideas before an international audience, a skill which is valuable, especially with regards to the defence of my thesis and future career. The third benefit may seem less important but for me the consortium offers an opportunity to network with other HCI PhD students and see what is happening in the community as a whole.

Context and Motivation

In an increasingly globalised world, long-distance relationships are becoming more and more common. These relationships need communication technologies to support them but symbolic systems (such as phones or email) are ill-suited to this. People need emotional support from one another; they need communication technologies with high levels of social presence – the feeling of emotional presence.

However, there is currently a lack of any theoretical basis behind the factors impacting social presence especially with regards to interaction design. This means that although there have been a large number of devices created to support relationships, the assessment of their impact is poor and the understanding of what works is minimal.

My hope is that by investigating the factors which impact social presence, communication technologies can be designed to support long-distance relationships. The logic is that by supporting social presence, people will feel closer to one another. Subsequently, this will increase people's satisfaction with their relationships.

As happiness is one of our defining characteristics, and our relationships can make us happy, by maintaining these relationships more effectively, and thus making us happier, we improve our general wellbeing.

Background and Related Work

Social Presence as a concept was first discussed in [1] where Short et. al define it as “the degree of salience of the other person in the interaction and the consequent salience of the interpersonal relationship”. Other terms include emotional connectedness and presence-in-absence. Social Presence has been treated as a property of the medium; this meant that a telephone was expected to convey a certain level of social presence, an email a different level. As such, further investigating social presence was unnecessary beyond assessing the communication medium. This assessment is now regarded as being false; [3] for example has demonstrated that email can create strong feelings of presence. This means that social presence needs to gather some of the research attention which has been lacking in the past, such that the factors which affect it during communicative acts are better understood.

There are a number of communication devices which have been designed to help support social presence. These tend to be either abstract, such as a single light as in [4] or an augmented artefact, for example the bed in [2]. These devices have been innovative at the level of design but crude at the level of evaluation. The assessment of these devices has been poor, mainly due to the lack of a commonly accepted measure. Very few devices, as of yet, have looked at simulating human *actions* over a distance. This is what my devices attempt to do.



Figure 1: The Thermal Hug belt



Figure 2: The Collaborahand

Statement of Thesis or Problem

By investigating the factors which impact social presence, I hope to build communication technologies to support emotional communication and thus to help maintain our many long-distance relationships. There are a number of problems associated with this thesis which need to be addressed. They can be stated as:

1. What is Social Presence? How do we measure it?
2. What factors have an impact on Social Presence? How can we support these factors in communication technologies?
3. Is there a link between Social Presence and relationship satisfaction?
4. Can we show that the improved communication technologies support the long-distance relationships?

The first question relates to what social presence is. The selected method to address this question is a diary study looking at both closeness and social presence. The study will assess whether social presence can be treated as an instance of closeness based on a communicative act. The envisaged distinction is similar to that between emotion and mood. An entire thesis could be completed on how to measure social presence - thus far, based on prior work [5,6,7], I have used established social presence questionnaires but this issue remains unresolved.

Discovering what factors impact social presence is the hardest problem to devise a method to answer. There are two methods I plan to use. If social presence is found to be an instance of closeness, it is reasonable to check whether the factors that impact closeness are the same for social presence. The second is to use the

devices in a number of studies investigating all kinds of factors - such as gender, relationships, tasks or age - selected on the basis of background reading.

The third and forth problem statements can be addressed in similar studies. To show the impact of the developed devices, each will be included in a medium-term field study. These studies will measure social presence but also use a pre- and post- study questionnaire to assess satisfaction with the relationship before and after using the devices. These studies will thus produce data to assess whether there is a link between social presence and relationship satisfaction. By including a diary aspect to these studies, it will be possible to investigate how these improved communication technologies impact people's relationships over time.

Dissertation Status

Thus far I have constructed a number of devices to explore the design space for social presence technologies. All of these devices have been designed to mimic a co-located activity - hugging, holding hands and leaving love notes - but across a distance. [5] describes my thermal hug belt and present experimental data indicating that such a device does increase feelings of social presence between close friends. The thermal hug belt can be seen in Figure 1. When activated, it creates a band of heat around the waist in a position where one might expect a hug to be felt.

[6] presents a discussion of our hand-holding device, the collaborahand (see Figure 2), and presents a description of the relevant design space. A pair of collaborahands are needed to create a communication



Figure 3: The Magic Sock Drawer System

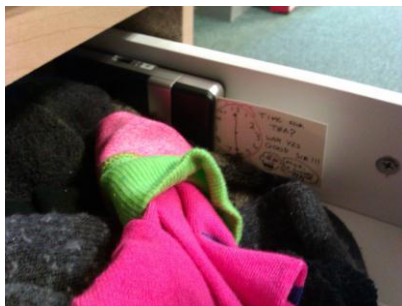


Figure 4: The Magic Sock Draw printing a love note

system. When one hand is gripped, as in Figure 2, the other hand closes. This is intended to represent hand holding over a distance.

[7] describes the design of the magic sock drawer, a way of leaving love notes between people across a distance in a place of intimacy. The system has three software options, using handwriting, typing and a combination of the two, to produce the love note. The intention is to investigate whether a trace of the human touch (e.g. using handwriting) has an advantage over machine generated fonts (e.g. typed). Figure 3 shows a complete unit, consisting of a tablet PC to write the note on and a mini printer to print received notes. Figure 4 shows a love note being printed, having been created on the paired unit.

A number of projects remain in progress. A study is currently running, analysing students' communication patterns with another individual. This study has two main aims. The first is to determine whether social presence can be defined as an instance of closeness based on a single communication act. The second objective is to investigate how different communication technologies are used for different purposes. In addition to this, work progresses on the collaborahand and magic sock drawer projects, with the aim of running a long-term field test with romantic couples living apart to determine whether the devices have an impact on social presence and the couples' relationship and subsequently *why* this impact occurs.

In terms of my thesis, I have written a complete literature review in draft form. I also have the outline of two subsequent chapters in draft form, one on defining social presence, including the study on social presence

as an instance of closeness, and the other on the design of the initial devices.

Expected Contributions

I expect that my thesis will result in information that will help support long-distance relationships. More specifically, I hope it will explain what social presence is and what its impact on relationships is. I expect to produce a list of factors which can impact the social presence of close couples. Creating a set of requirements for communication technologies to support emotional communication would help to create better devices. Finally a number of novel devices will be developed to demonstrate the power of these contributions which could be used to support long-distance relationships.

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